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(12) United States Patent

Duesterhoft et al.

(54) DORMANT TO ACTIVE APPURTENANCES FOR REPORTING INFORMATION REGARDING WOUND DRESSINGS

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(US)

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(Continued)

(56) References Cited

U.S. PATENT DOCUMENTS

4,384,288 A 5/1983 Walton 5,704,352 A 1/1998 Tremblay et al. (Continued)

FOREIGN PATENT DOCUMENTS

EP 0 430 608 A1 6/1991 WO WO 00/08203 2/2000 (Continued)

OTHER PUBLICATIONS

U.S. Appl. No. 14/252,136, Duesterhoft et al. (Continued)

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(57) ABSTRACT

Appurtenances to wound dressings can include: a substrate configured to attach to a wound dressing; a fluid-activated voltaic cell attached to the substrate; a transmission unit attached to a surface of the substrate, the transmission unit including circuitry and at least one antenna, the transmission unit configured to transmit a signal in response to current generated by the fluid-activated voltaic cell; and a projection operably attached to the fluid-activated voltaic cell, the projection of a size and shape to extend into an interior region of the wound dressing and configured to sample a fluid within the interior region of the wound dressing.

33 Claims, 14 Drawing Sheets

